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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,895	03/09/2004	Takashi Itoh	82478-5700	5060

7590

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EXAMINER

RAABE, CHRISTOPHER M

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/797,895

Applicant(s)

ITOH ET AL.

Examiner

Christopher M. Raabe

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Iwasaki (US patent 5491375).

With regard to claim 1,

Iwasaki discloses a cathode-ray tube device comprising: a phosphor screen (18 of fig 5); and a cold cathode electron gun that includes a cold cathode having a field emitter array that emits a beam of electrons toward the phosphor screen (5 of fig 6), and a gate electrode that controls the emission (6 of fig 6), a first grid electrode that is positioned between the cold cathode and the phosphor screen (3 of fig 6), a second grid electrode that is positioned between the first grid electrode and the phosphor screen (9 of fig 6), an electron speed control unit operable to accelerate the electrons that have passed through the gate electrode, by a greater degree as a beam current carried by the beam of the electrons is larger, and a lens strength control unit operable to enhance a lens strength of an electron lens that is formed by the gate electrode, the first grid electrode, and the second grid electrode, by a greater degree as the beam current is larger (column 2, lines 33-40).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki as applied to claim 1 above, and further in view of Tomihari (US Patent 5543680) and Makishima et al. (US Patent 5734223).

With regard to claim 2,

Iwasaki discloses the cathode-ray tube device.

Iwasaki does not disclose a distance from the gate electrode to one edge of the first grid electrode closer to the phosphor screen in a thickness direction of the first grid electrode

Tomihari discloses the distance from the gate electrode to one edge of the first grid electrode farther from the phosphor screen in a thickness direction of the first grid electrode to be .1 mm, but does not disclose the thickness of the first grid electrode.

Makishima et al. do disclose the thickness of a first grid electrode to be .1mm (fig 11), hence leading to a distance from the gate electrode to one edge of the first grid electrode closer to the phosphor screen in a thickness direction of the first grid electrode to be in a range of 0.10 to 0.35 mm inclusive.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the dimensions disclosed by Tomihari and Makishima et al. into the device of Iwasaki in order to better control beam spot size.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki as applied to claim 1 above, and further in view of Gorski et al. (US Patent 6255768).

With regard to claim 3,

Iwasaki discloses the cathode-ray tube device wherein the first grid electrode has a through-hole that allows the beam of the electrons to pass through (3 of fig 6).

Iwasaki does not disclose the diameter of the through-hole.

Gorski et al. do disclose a diameter of a through-hole to be in a range of 0.15 to 0.60mm inclusive (column 5, lines 5-10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the dimensions disclosed by Gorski et al. into the device of Iwasaki in order to better control beam spot size.

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6. Claims 4,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki as applied to claim 1 above, and further in view of Itoh et al. (US Pre-grant Publication 2003/0006687).

With regard to claim 4,

Iwasaki discloses the cathode-ray tube device.

Iwasaki does not disclose the potential of the first grid electrode.

Itoh et al. do disclose a potential of a first grid electrode to be lower than a potential of the gate electrode (paragraph 39).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the potential difference disclosed by Itoh et al. into the device of Iwasaki in order to better control beam spot size.

The phrase "potential of the gate electrode is higher as the beam current is larger" does not differentiate the claimed invention from the prior art, as is required of apparatus claims (MPEP 2114).

With regard to claim 7,

Iwasaki discloses the cathode-ray tube device.

Iwasaki does not disclose the lens strength control unit enhancing the lens strength to form a crossover in the beam of the electrons, at one side of the gate electrode closer to the phosphor screen.

Itoh et al. do disclose a lens strength control unit enhancing a lens strength to form a crossover in a beam of electrons, at one side of a gate electrode closer to a phosphor screen (figure 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the lens strength of Itoh et al. into the device of Iwasaki in order to better control beam spot size.

7. Claims 5,6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki as applied to claim 1 above, and further in view of Itoh et al. (as above) and Makishima (5814931) and Gorski et al. (as above).

With regard to claim 5,

Iwasaki discloses the cathode-ray tube device.

Iwasaki does not disclose a peripheral focusing electrode that is provided on a periphery of the gate electrode, that has a thickness substantially equal to a thickness of the gate electrode, and that has a lower potential than the gate electrode.

Makishima does disclose a peripheral focusing electrode that is provided on a periphery of a gate electrode, that has a thickness substantially equal to a thickness of the gate electrode (fig 10),

Itoh et al. do disclose the focusing electrode having a lower potential than the gate electrode (paragraph 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the focusing electrode of Makishima and potential of Itoh et al. into the device of Iwasaki in order to better control beam spot size.

With regard to claim 6,

Iwasaki discloses the cathode-ray tube device.

Iwasaki does not disclose a peripheral focusing electrode.

Gorski et al. do disclose a peripheral focusing electrode and a first grid electrode are integrally formed (18, 19, 20 of fig 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the focusing electrode of Gorski et al. in order to better control beam spot size.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patents 4178531, 5990608, 6943491.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Raabe whose telephone number is 571-272-8434. The examiner can normally be reached on m-f 7am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CR


ASHOK PATEL
PRIMARY EXAMINER